

IN THE CLAIMS:

1. (Currently Amended) A method for repairing a coated component, which has been exposed to engine operation, to produce a repaired component without a weight penalty comprising:

a) providing an engine run component including a base metal substrate having thereon a bond coat;

b) removing the bond coat, wherein a portion of the base metal substrate between about 1-3 mils in thickness also is removed to create a remaining base metal substrate of reduced thickness;

c) applying a lower growth environmental bond coating directly to the remaining base metal substrate comprising an alloy having an aluminum content of about 10 ~~10-60~~ atomic percent, wherein the lower growth environmental bond coating and the remaining base metal substrate of the component interact to form a diffusion zone, and upon subsequent repair of the component, less than about 3 ~~1-3~~ mils in thickness of the remaining base metal substrate is removed because of less environmental coating growth into the substrate than the prior bond coat, thereby extending component life and increasing repairability of the component, wherein the lower growth environmental bond coat has a density less than density of the prior bond coat and the repaired component does not incur a weight penalty in that the repaired component does not weigh more than the component prior to repair.

2. (Original) The method of claim 1, wherein not more than about 1 mil in thickness of the remaining base metal substrate of c) is removed.

3. (Original) The method of claim 1, wherein the bond coat of a) is a diffusion bond coating.

4. (Original) The method of claim 3, wherein the environmental bond coating of c) has an integrated aluminum level less than about 2250 μ m*at.% Al.

5. (Original) The method of claim 1, wherein thickness of the environmental coating of c) is controlled to produce an integrated aluminum level of less than or equal to about 4000 $\mu\text{m} \cdot \text{at.}\% \text{ Al}$, and the environmental coating comprises a $\beta\text{-NiAl}$ overlay coating.

6. (Original) The method of claim 1, wherein thickness of the environmental bond coating of c) is controlled to produce an integrated aluminum level of less than or equal to about 4000 $\mu\text{m} \cdot \text{at.}\% \text{ Al}$.

7. (Currently Amended) A method for repairing a coated component, which has been exposed to engine operation, to produce a repaired component without a weight penalty comprising:

a) providing an engine run component including a base metal substrate having thereon a bond coat;

b) removing the bond coat, wherein a portion of the base metal substrate between about 1-3 mils in thickness also is removed to create a remaining base metal substrate of reduced thickness;

c) applying a lower growth environmental bond coating directly to the remaining base metal substrate comprising an alloy having an aluminum content selected from the group consisting of about 10 to 60 atomic percent, about 15 atomic percent and about 20 atomic percent; and upon subsequent repair of the component, less than about 3 to 3 mils in thickness of the remaining base metal substrate is removed because of less environmental coating growth into the substrate than the prior bond coat, thereby extending component life and increasing repairability of the component, wherein the environmental bond coating is an MCrAlY coating applied to a thickness range not exceeding between about 3-8 mils, wherein M is selected from the group consisting of Ni, Fe, Co and combinations thereof, with Cr and Y being optional, and the thickness of the environmental bond coating of c) is controlled to produce an integrated aluminum level of less than or equal to about 4000 $\mu\text{m} \cdot \text{at.}\% \text{ Al}$, wherein the environmental bond coating has a density less than density of the prior bond coat and the repaired component does not incur a weight penalty in that the repaired component does not weigh more than the component prior to repair.

8. (Original) The method of claim 2, wherein thickness of the environmental bond coating of c) is controlled to produce an integrated aluminum level of less than or equal to about 4000 $\mu\text{m}\cdot\text{at.}\%$ Al.
9. (Original) The method of claim 8, wherein the environmental bond coating comprises a material selected from the group consisting of Ni, Al, Cr, reactive elements, noble metals and combinations thereof.
10. (Original) The method of claim 1, wherein the component is a gas turbine engine component.
11. (Original) The method of claim 4, wherein the environmental bond coating is a diffusion coating.
12. (Original) The method of claim 11, wherein the diffusion coating comprises an aluminide diffusion coating.
13. (Original) The method of claim 11, wherein the diffusion coating comprises a PtAl diffusion coating.
- 14.-27. (Canceled)
28. (Previously Presented) The method of claim 1, wherein the environmental bond coat has a density of about 6.1 g/cm^3 and the prior bond coat has a density of about 7.9 g/cm^3 .
29. (Previously Presented) The method of claim 7, wherein the environmental bond coat has a density of about 6.1 g/cm^3 and the prior bond coat has a density of about 7.9 g/cm^3 .
30. (Previously Presented) The method of claim 4, wherein the prior bond coat is a PtAl diffusion coating having an integrated aluminum level of about 2250 $\mu\text{m}\cdot\text{at.}\%$ Al or greater.